We claim:

1. A vibratory meter (5) for determining a vapor pressure of a fluid, the vibratory meter (5) comprising:

a meter assembly (10) having a fluid; and

a meter electronics (20) communicatively coupled to the meter assembly (10), the meter electronics (20) being configured to:

determine a vapor pressure of the fluid in the meter assembly (10) based on a static pressure of the fluid in the meter assembly (10).

2. The vibratory meter (5) of claim 1, wherein the meter electronics (20) being configured to determine the vapor pressure of the fluid in the meter assembly (10) based on the static pressure of the fluid in the meter assembly (10) comprises the meter electronics (20) being configured to:

vary the static pressure of the fluid in the meter assembly (10) until a fluid phase change is detected; and

determine the static pressure of the fluid in the meter assembly (10).

3. The vibratory meter (5) of claim 2, wherein the static pressure of the fluid in the meter assembly (10) is varied due to at least one of an elevation change and a fluid velocity change of the fluid in the meter assembly (10).

4. The vibratory meter (5) of one of any of the foregoing claims 1 through 3, wherein:

the meter assembly (10) is configured to vibrate and provide sensor signals resulting from the vibration; and

the meter electronics (20) is further configured to detect a vapor in the meter assembly (10) based on the sensor signals.

5. The vibratory meter (5) of ~~one of any of the foregoing claims 1 through 4~~ claim 1, wherein the meter electronics (20) is further configured to determine the vapor pressure of the fluid in the meter assembly (10) based on a detection of a phase change of the fluid in the meter assembly (10).

6. The vibratory meter (5) of one of any of the foregoing claims 1 through 5, wherein the static pressure of the fluid in the meter assembly (10) is determined based on at least one of an inlet pressure and an outlet pressure of the fluid.

7. The vibratory meter (5) of one of any of the foregoing claims 1 through 6, wherein the static pressure of the fluid in the meter assembly (10) is determined by calculating a static pressure change in the meter assembly (10) based on a ~~cross-sectional area change in the meter assembly (10)~~ cross-section area change of a flow of the fluid in the meter assembly.

8. The vibratory meter (5) of one of any of the foregoing claims 1 through 7, wherein the meter electronics (20) is further configured to communicate with one or more of a pump (510) and a flow control device (540) to vary the static pressure of the fluid in the meter assembly (10).

9. The vibratory meter (5) of one of any of the foregoing claims 1 through 8, wherein the meter electronics (20) is further configured to communicate with at least one of an inlet pressure sensor (520) and an outlet pressure sensor (530) to determine the static pressure of the fluid in the meter assembly (10).

10. A method for determining a vapor pressure of a fluid, the method comprising:

providing fluid to a meter assembly; and

determining a vapor pressure of the fluid in the meter assembly based on a static pressure of the fluid in the meter assembly.

11. The method of claim 10, wherein determining the vapor pressure of the fluid in the meter assembly based on the static pressure of the fluid in the meter assembly comprises:

varying the static pressure of the fluid in the meter assembly until a fluid phase change is detected; and

determining the static pressure of the fluid in the meter assembly.

12. The method of claim 11, wherein the static pressure of the fluid in the meter assembly is varied by at least one of changing an elevation and a changing fluid velocity of the fluid in the meter assembly.

13. The method of one of any of the foregoing claims 10 through 12, further comprising:

vibrating a portion of the meter assembly and providing sensor signals resulting from the vibration; and

detecting a vapor in the meter assembly based on the sensor signals.

14. The method of ~~one of any of the foregoing claims 10 through 13~~ claim 10, further comprising determining the vapor pressure of the fluid in the meter assembly based on a detection of a phase change of the fluid in the meter assembly.

15. The method of one of any of the foregoing claims 10 through 14, wherein determining the static pressure of the fluid in the meter assembly is based on at least one of an inlet pressure and an outlet pressure of the fluid.

16. The method of one of any of the foregoing claims 10 through 15, wherein determining the static pressure of the fluid in the meter assembly comprises calculating a static pressure change in the meter assembly based on a ~~cross-sectional area change in the meter assembly~~ cross-section area change of a flow of the fluid in the meter assembly.

17. The method of one of the foregoing claims 10 through 16, further comprising using a meter electronics to communicate with one or more of a pump and a flow control device to vary the static pressure of the fluid in the meter assembly.

18. The method of one of the foregoing claims 10 through 17, further using a meter electronics to communicate with at least one of an inlet pressure sensor and an outlet pressure sensor to determine the static pressure of the fluid in the meter assembly.